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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/625,336	07/25/2000	Moris Kori	004742/AMI-00-07	7523

32588 7590 09/09/2003

APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050

EXAMINER

MOORE, KARLA A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 09/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

09/625,336

Applicant(s)

KORI ET AL.

Examiner

Karla Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,7,8,10,12,13,23 and 26-30 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.

- 6) ☒ Claim(s) 1-4,7,8,10,12,13,23 and 26-30 is/are rejected.

- 7) ☐ Claim(s) _____ is/are objected to.

- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 21. 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-4, 7-8, 10, 12-13, 23 and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2001/400441250 to Werkhoven et al. in view of U.S. Patent No. 5,167,735 to Jurmann
2. Werkhoven et al. disclose a method for forming a layer on a substrate disposed in a processing chamber substantially as claimed, said method comprising: chemisorbing onto said substrate alternating monolayers of a first compound and second compound (paragraph 18), with said second compound having fluorine atoms associated therewith, with each of said first and second compounds being introduced into said processing chamber along with a carrier gas; and controlling a quantity of said fluorine atoms associated with the monolayer of said second compound as a function of said carrier gas (paragraph 48, 116). The carrier gas is selected from a group of gases consisting of nitrogen, argon and hydrogen (paragraph 61). The first compound (triethyl boron or diborane) includes a boron containing compound (used for doping to increase conductivity-paragraph 7) and the second compound is a refractory metal (WF_6) selected from the group consisting of titanium and tungsten (paragraphs 46-47).
3. The method further comprises purging said processing chamber following chemisorption of each of the alternating layers. The purging process includes both introducing a purging gas therein and subsequently pumping said process chamber to evacuate all gases disposed. The carrier gas is selected from the following group of compounds -- hydrogen, nitrogen, argon or helium (paragraph 65).
4. However, Werkhoven et al. fail to teach the use of a carrier gas and a purge gas with differing constituents.
5. Jurmann teach the use of nitrogen or argon as purge gases because they are inert, relatively trouble-free and inexpensive (column 2, rows 39-43). Use of either of these gases with hydrogen or helium as the carrier gas (as taught in Werkhoven et al.) would lead to different constituents being used for the carrier and purge gas.
6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided nitrogen or argon as the purge gas along with hydrogen or helium as a carrier

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gas in Werkhoven et al. in order to take advantage of the inert character of the gas, the low cost of the gas and the tendency of the gas to be trouble free as taught by Jurmann.

7. With respect to claims 26-30, the Wekhoven et al. and Jurmann teach the recited combinations of purge gas and carrier gas.

Response to Arguments

8. Applicant's arguments filed 06/30/03 have been fully considered but they are not persuasive.

9. In response to applicant's argument that there is no suggestion to combine the references-- Werkhoven et al. and Jurmann, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Werkhoven et al. make use of a purging process as does Jurmann. Jurmann provides motivation for using gases such as nitrogen or hydrogen purge gases. The reasons are listed above. It would be obvious to use the purge gases in Werkhoven for the same reasons.

10. Applicant argues that the combination of Werkhoven and Jurmann does not suggest a carrier gas and a purge gas having differing constituents. Examiner points out that each of Werkhoven and Jurmann disclose a list of possible carrier gases and purge gases. As noted in the previous and current office action, there are combinations of the disclosed gases that do in fact read on Applicant's recitation of "a carrier gas and a purge gas having differing constituents".

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date

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of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km

*primary Examiner
AU 1763
P. Hassan Zadeh*